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Agricultural Research Service



KEYS FOR THE IDENTIFICATION OF SOME LEPIDOPTEROUS
LARVAE FREQUENTLY INTERCEPTED AT QUARANTINE^{1/}

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The following keys are intended to assist quarantine inspectors in recognizing the lepidopterous larvae most frequently intercepted at ports of entry. They are based on the differential characters noted in the literature, and on the larval collection and host catalog in the United States National Museum.

In using the keys, it should be borne in mind that their validity is dependent on three factors--viz, (1) structure, (2) origin, and (3) host. Moreover, the characters used for separating the families are not completely diagnostic for the entire family but will serve to separate the species treated here.

The drawings are diagrammatic and not complete in all details, only such characters as are referred to in the text being figured. In checking against setal maps showing lateral views, the head of the larva should be to the observer's left; in dorsal views the head should be toward the observer. The specimen should be placed in a Syracuse watch glass, immersed in alcohol, and examined under a low-power binocular microscope.

^{1/} This is a revision of Bureau of Entomology and Plant Quarantine E-475, issued in May 1939. The changes consist chiefly in bringing up to date the nomenclature of the species.

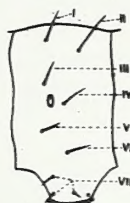
KEY TO FAMILIES

1. Body with numerous short secondary setae (A) 2



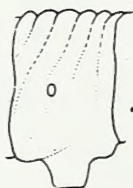
A

- Body without numerous short secondary setae (A) 3



A

2. Body cylindrical, not depressed, segments divided into 6 or fewer annulets (A); crochets in a continuous mesoseries, not interrupted by a spatulate lobe (B).



A



B

Pieridae p. 9

- Body depressed, fusiform (spindle-shaped), segments not divided into annulets; crochets in a mesoseries, interrupted at center by a spatulate lobe (A).



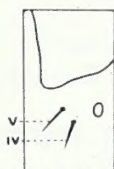
A

Lycaenidae p. 10

3. With more than one pair of abdominal prolegs 4
 - With abdominal prolegs absent except on 6th segment

Geometridae p. 14

4. Two setae in prespiracular group of prothorax (A) 5



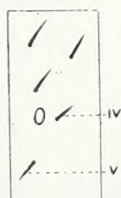
A

- Three setae in prespiracular group of prothorax (A) 6

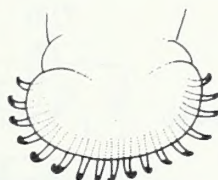


A

5. Proleg-bearing segments with seta IV behind, and V below, the spiracle (A); crochets in a longitudinal mesoseries (B).



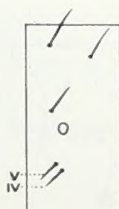
A



B

Phalaenidae p. 11

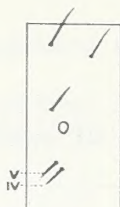
- Proleg-bearing segments with setae IV and V close together below the spiracle (A); crochets in a continuous ring or a penellipse.



A

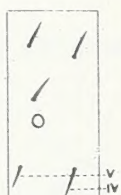
Pyralidoidea p. 14

6. Setae IV and V of proleg-bearing segments close together below the spiracle (A) 7



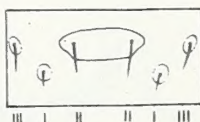
A

- Setae IV and V of proleg-bearing segments distant from each other and below the spiracle (A) 14



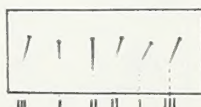
A

7. Paired setae II of 9th abdominal segment on a sclerotized plate (dorsal view (A)) 8



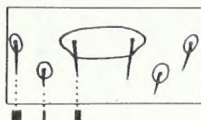
A

- Paired setae II of 9th abdominal segment not on a sclerotized plate (dorsal view (A)) 10



A

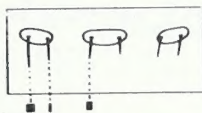
8. Seta I of 9th abdominal segment approximately equidistant from setae II and III (dorsal view (A)).



A

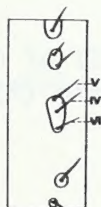
Tortricidae p. 31

- Seta I of 9th abdominal segment closely associated with seta III, on a single sclerotized plate (dorsal view (A)) 9

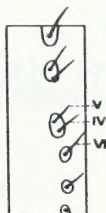


A

9. Seta VI present on 9th abdominal segment (A and B).



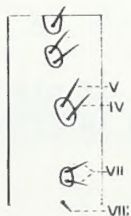
A



B

Olethreutidae p. 30

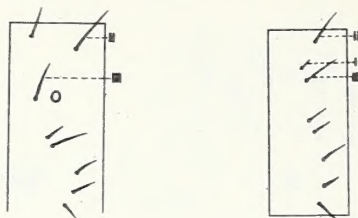
- Seta VI absent from 9th abdominal segment (A).



A

Phaloniidae p. 32

10. Seta III of 8th abdominal segment directly in front of spiracle (A); seta I of 9th abdominal segment approximate to seta III but not on same plate (B). Anal fork absent.

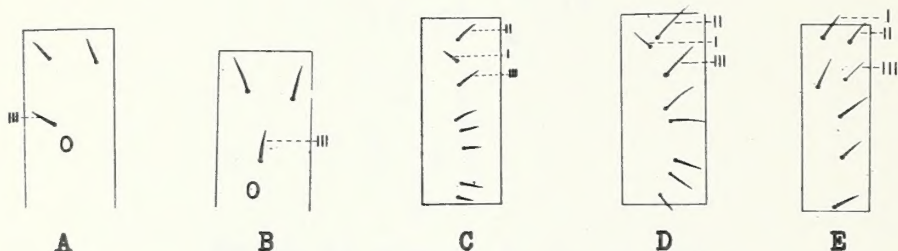


A

B

Cosmopterygidae p. 25

- Seta III of 8th abdominal segment not directly in front of spiracle (A and B) or, if so, anal fork present. Seta I of 9th abdominal segment not closely associated with seta III (C, D, and E) 11



A

B

C

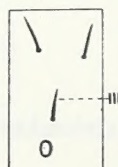
D

E

11. Submentum with a large oval pit (A); seta III of 8th abdominal segment above and slightly behind the spiracle (B).



A



B

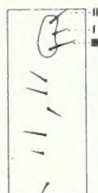
Blastobasidae p. 29

- Submentum without an oval pit; or, if pit is present, seta III of 8th abdominal segment above and in front of spiracle (A)... 12



A

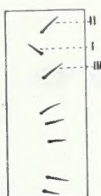
12. Setae I, II, and III of 9th abdominal segment on a sclerotized plate (A).



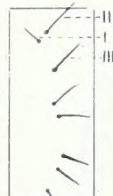
A

Hyponomeutidae (part) p. 32
(Argyresthia)

- Setae I, II, and III of 9th abdominal segment not on a sclerotized plate (A and B) 13

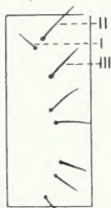


A



B

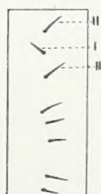
13. Seta I closely associated with seta II on 9th abdominal segment (A).



A

Oecophoridae (part) p. 29
(Endrosis and Hofmannophila)

- Seta I of 9th abdominal segment not closely associated with seta II, approximately equidistant from setae II and III (A).



A

Gelechiidae p. 26

14. Crochets of abdominal proleg in multiserial rings (A).



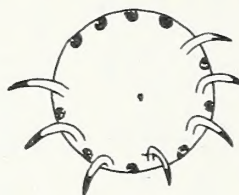
A

Acrolophidae p. 33

- Crochets of abdominal proleg in a complete ring, enclosing a short longitudinal series (A), or in a pseudocircle (B).



A



B

Hyponomeutidae (part) p. 32
(Acrolepia and Plutella)

Family PIERIDAE

1. Larger seta-bearing tubercles of abdominal segments broadly expanded at bases, about as wide as high (A); body with bright yellow and fuscous or blackish stripes 2



A

- Larger seta-bearing tubercles of abdominal segments not broadly expanded at bases, higher than the width at base (A); body light green, with or without pale-yellow or whitish stripes 3



A

2. Head black, except for gray front and a light-gray patch on each side; body with 2 yellow stripes (middorsal and spiracular); anal shield black, with a short yellowish median stripe; spiracles with black rims and pale-yellowish centers.

Europe.

Hosts: Cabbage, cauliflower, and mustard. Pieris brassicae (L.)

Head whitish, except for pigmentation of tubercles; body with 3 yellow stripes (middorsal, subdorsal, and spiracular); anal shield whitish, except for pigmentation of tubercles; spiracles with black rims and brown centers.

Cuba, Mexico, Puerto Rico, and Virgin Islands.

Hosts: Cabbage, cauliflower, and mustard. Ascia monuste (L.)

3. Body with a yellow middorsal stripe; proleg-bearing segments with yellowish or whitish pigmented band, discontinuous shortly posterior to the spiracle (A).



A

Europe and North America.

Hosts: Cabbage, cauliflower, and mustard.

Pieris rapae (L.)

- Body without a middorsal stripe; proleg-bearing segments with a whitish or yellowish pigmentation enclosing the spiracle (A).



A

Europe and North America.

Hosts: Mustard and turnip.

Pieris napi (L.)

Family LYCAENIDAE

Head retractile, usually drawn into prothorax; body color light green or with a slight pinkish tinge; spatulate lobes of abdominal prolegs not sclerotized along lateral margins.

Mexico.

Hosts: Beans and cotton (borer in green pods and bolls).

Strymon melinus (Hbn.)

Family PHALAENIDAE

1. Prolegs present on abdominal segments 3 to 6 2

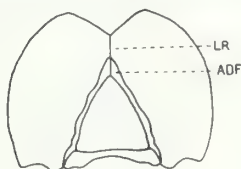
- Prolegs absent from abdominal segments 3 and 4, present on 5 and 6.

Canada, England, and Mexico.

Hosts: Cabbage and other crucifers.

Autographa group.

2. Adfrontals extending almost to the vertex, longitudinal ridge less than one-half the height of front (A); a yellowish middorsal spot on metathorax and abdominal segments 1 to 4.



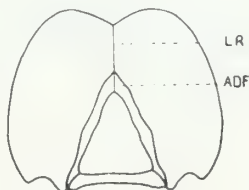
A

Cuba, Mexico, West Indies, and South America.

Hosts: Peas, pepper, and tomato.

Peridroma margaritosa (Haw.)

- Adfrontals terminating definitely before the vertex, longitudinal ridge at least one-half the height of front (A); metathorax and abdominal segments 1 to 4 without yellowish middorsal spots 3

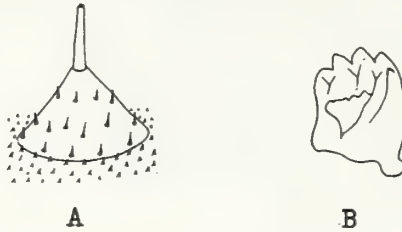


A

3. Skin with short, sharp spines 4

- Skin smooth or with flattened granules 5

4. Tubercles I and II of abdominal segments with spines (A);
mandible with a broad plate on oral surface (B).

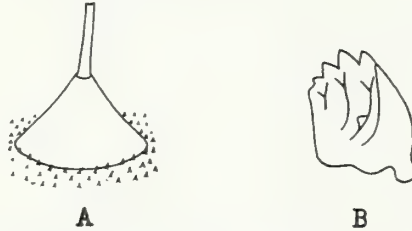


Mexico and West Indies.

Hosts: Cotton (bolls), beans, okra, peas, pepper, and tomato.

Heliothis virescens (F.)

- Tubercles I and II of abdominal segments without spines (A);
mandible without broad plate on oral surface, usually a tooth-
like projection on the second rib (B).

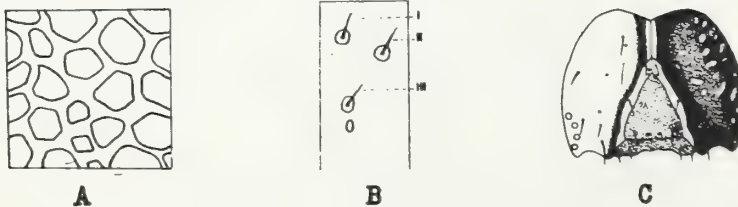


Mexico, West Indies, and South America.

Hosts: Beans, corn, cotton, lettuce, peas, pepper, and tomato.

Heliothis zea (Boddie)

5. Skin with flattened granules (A); sclerotized plates at bases of
body setae moderately large and flat or slightly convex (B);
[adfrontal area and that along longitudinal ridge white or pale,
appearing as an inverted Y (人) (C).]

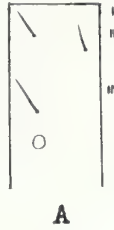


Mexico.

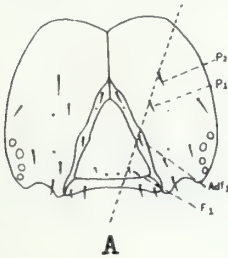
Hosts: Corn, cotton, beans, grasses, kale, rape, spinach, and
sugarcane.

Laphygma frugiperda (J.E. Sm.)

- Skin smooth; sclerotized plates at bases of body setae minute, much reduced (A) 6



6. Setae P_2 , P_1 , Adf_1 , and F_1 in line (A); dark pigmentation at base of seta IIb on mesothorax (B); mandible without a toothlike projection on oral surface (C); third segment of labial palpus as long as, or longer than, basal segment (D).

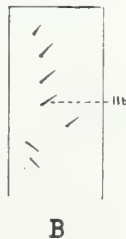
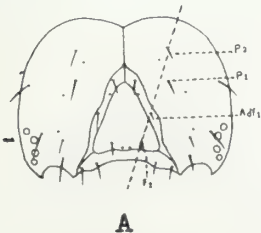


Mexico.

Hosts: Beets, pepper, and tomato.

Laphygma exigua (Hbn.)

- Setae P_2 , P_1 , Adf_1 , and F_1 not in line (A); no dark pigmentation at base of seta IIb of mesothorax (B); mandible with a single, pointed, toothlike projection from the second ventral rib on oral surface (C); third segment of labial palpus not more than one-half as long as basal segment (D).



Canada and Mexico.

Hosts: Peas, pepper, and tomato.

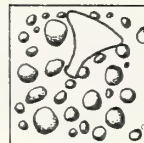
Agrotis c-nigrum (L.)

Family GEOMETRIDAE

Skin granulose; setae spatulate (A).

Mexico and Scotland.

Hosts: Cut flowers and heather.

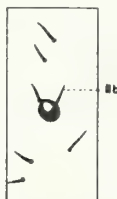


A

Sterrha spp.

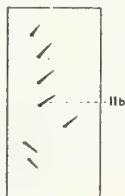
Superfamily PYRALIDOIDEA

1. Seta IIb of mesothorax with a dark sclerotized ring at base (A).....Phycitidae 2



A

- Seta IIb of mesothorax without a dark sclerotized ring at base (A)..... 9

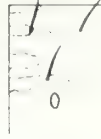


A

2. Prespiracular shield of prothorax extending below and behind the spiracle, posterior part weakly pigmented (A); body color pinkish, with whitish, discontinuous, longitudinal bands on most of the segments (B).



A



B

Cuba, Mexico, and Puerto Rico.

Hosts: Corn, peas, and sugarcane.

Elasmopalpus lignosellus (Zell.)

- Prespiracular shield of prothorax neither extending below nor behind the spiracle (A); body color white, or if pinkish, the broken longitudinal bands absent 3

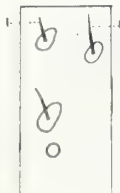


A

3. Skin granulate (under low magnification) 4

- Skin smooth (under low magnification) 5

4. Sclerotized plates at bases of body setae broadly oval and flat; seta II of abdominal segments 1 to 7 below level of seta I (A); large larvae, borers in logs.



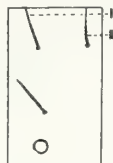
A

Costa Rica, Honduras, and Mexico.

Host: Cedar (Spanish cedrella) logs.

Hypsipyla grandella (Zell.)

- Sclerotized plates at bases of body setae very small; seta II of abdominal segments 1 to 7 on level with or higher than seta I (A); small larvae, in green corn.



Mexico.
Host: Corn.

A.

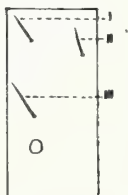
Moodna bisinuella Hamp.

5. Seta III of abdominal segments 1 to 7 each with a pigmented, crescent-shaped plate at base (A) 6



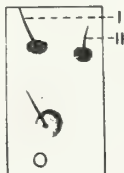
A

- Seta III of abdominal segments 1 to 7 without such plates (A).. 7



A.

6. Setae I and II of abdominal segments with strongly sclerotized and moderately large plates at bases (A).



A

England, France, Greece, Italy, Spain, Cuba, and Puerto Rico.
Hosts: St. John's bread and tamarind (pods).

Myelois ceratoniae Zell.

- Setae I and II of abdominal segments with weakly sclerotized and much reduced plates at bases (A).



A

Cuba, British West Indies, and Jamaica.

Hosts: Grapefruit, orange, and fig (in the fruits).

Myelois venipars Dyar

7. Prothoracic shield pale yellow, with pattern of blackish or fuscous markings as illustrated (A).



A

Bahamas, Barbadoes, Puerto Rico, Mexico, and West Indies.

Hosts: Beans and peas (in the pods).

Fundella pellucens Zell.

- Pattern of markings on prothoracic shield not as above 8

8. Setae I and II of abdominal segments with definite pigmented plates at bases (A).



A

Practically cosmopolitan.

Hosts: Stored products (grain, dried vegetables, and fruits).

Ephestia spp.

- Setae I and II of abdominal segments without definite pigmented plates at bases (A).



A

Practically cosmopolitan.

Hosts: Stored products (grain, dried vegetables, and fruits).

Plodia interpunctella (Hbn.)

- 9. Prothoracic shield with pattern of dark fuscous markings as illustrated (A).



A

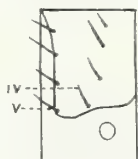
Practically cosmopolitan.

Hosts: Lima beans and pigeon peas.

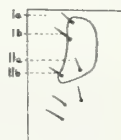
Etiella zinckenella (Treit.)

- Pattern of markings on prothoracic shield not as above 10

- 10. Prespiracular and prothoracic shields fused, setae IV and V on the lateral margin (A); setae Ia, Ib, IIa, and IIb of mesothorax on a single sclerotized plate (B) (lateral view). Galleriidae



A



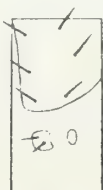
B

Mexico.

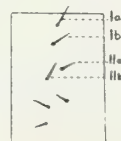
Host: Pineapple

Alpheias conspirata Hein.

- Prespiracular and prothoracic shields not fused (A); setae Ia, Ib, IIa, and IIb of mesothorax not on a single sclerotized plate (B) 11

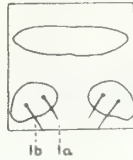


A



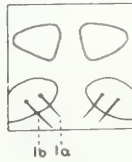
B

11. A single transverse plate (without setae) on posterior dorsal area of mesothorax (dorsal view) (A)Crambidae 12



A

- A pair of plates (without setae) on posterior dorsal area of mesothorax (dorsal view) (A), or such plates absent. Pyraustidae 15



A

12. VI of meso- and metathorax bisetose (A) 13



A

- VI of meso- and metathorax unisetose (A); [body color whitish, with 2 pink longitudinal stripes; a small pigmentation surrounding bases of setae IV and V on proleg-bearing segments (B).]



A



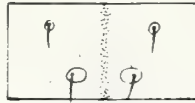
B

Mexico.

Host, Sugarcane (borer in stalk).

Chilo sp.

13. Body with a distinct pinkish middorsal stripe (A); plates at bases of body setae weakly sclerotized and concolorous with the body.



" "

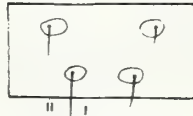
A

China, Japan, and Manchuria.

Host: Rice straw (borer in stems).

Chilo suppressalis (Wlk.)

- Body without a pinkish middorsal stripe (A); plates at bases of body setae strongly sclerotized and heavily pigmented or weakly sclerotized and concolorous with the body 14



" "

A

14. Plates at bases of body setae blackish or fuscous.

Mexico, tropical America, and Oriental regions.

Hosts: Green corn and sugarcane (borers in ears and stalks).

(Summer form) Diatraea spp.

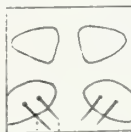
- Plates at bases of body setae pale, concolorous with the body.

Mexico, tropical America, and Oriental regions.

Hosts: Green corn and sugarcane (borers in ears and stalks).

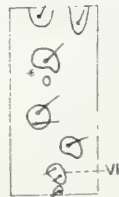
(Winter form) Diatraea spp.

15. Meso- and metathorax each with a pair of plates (without setae) on posterior dorsal margins (A); [group VII of first abdominal segment bisetose (B).]



15 1a

A



B

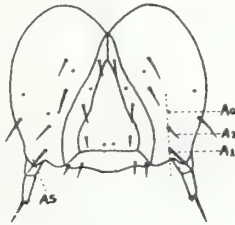
Cuba, Mexico, Puerto Rico, Hawaii, Tahiti, and Japan.

Hosts: Beans and pigeon peas (borer in pods).

Maruca testulalis (Geyer)

- Meso- and metathorax without such plates on posterior dorsal margins; [group VII of first abdominal segment bisetose or trisetose] 16

16. Head capsule with a shieldlike extension over base of antenna; [puncture A_a in line with or somewhat behind a line connecting setae A_1 and A_2 (A); puncture O_a directly posterior to ocellus VI (B).]



A



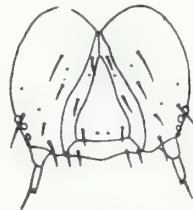
B

Europe, the Orient, and Canada.

Hosts: Beans, corn, and pepper (a borer).

Pyrausta nubilalis (Hbn.)

- Head capsule without a shieldlike extension over base of antenna (A) 17



A

17. Ocellus II much closer to ocellus I than to ocellus III (A); head pale yellow, without definite markings



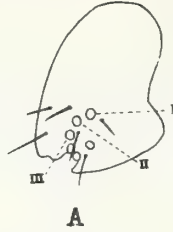
A

Cuba, Mexico, and Puerto Rico.

Hosts: Cucumber and squash.

Diaphania spp.

- Ocellus II approximately equidistant from ocelli I and III (A); head blackish, fuscous, or (if pale yellow) with definite markings..... 18



- 18. Ocellus I distinctly larger than ocellus II; body with pinkish longitudinal stripes (A)..... 19



- Ocellus I approximately equal in size to ocellus II; body without pinkish longitudinal stripes 20

- 19. Head blackish or fuscous, with a distinct whitish area along adfrontal suture, extending to vertex; seta O_3 anterior to a line joining setae L_1 and O_2 (A).



Barbadoes, Cuba, Jamaica, and Mexico.

Hosts: Cabbage, mustard, radish, and turnip.

Hellula rogatalis (Hlst.)

- Head paler (mottled appearance), area along adfrontal suture pale but not white; seta O_3 posterior to a line joining setae L_1 and O_2 (A).



A

Canal Zone, Cuba, and Mexico.
Hosts: Mustard and white chard.

Hellula phidilealis (Walk.)

20. Prothoracic shield with a dark fuscous reniform spot posterior to seta Ib (A); plates at bases of body setae weakly sclerotized, pale and concolorous with the body..... 21



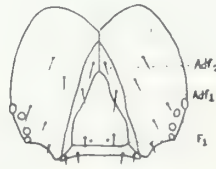
A

- Prothoracic shield without a dark reniform spot posterior to seta Ib; plates at bases of body setae moderately or heavily sclerotized, brown or black 22

21. Prespiracular shield ovate (A); distance between Adf_1 and F_1 greater than that between Adf_1 and Adf_2 (B).



A



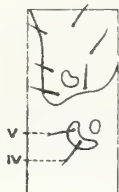
B

Canada, Bermuda, Mexico, and Puerto Rico.

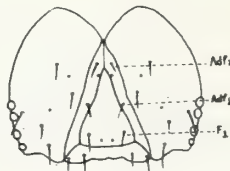
Hosts: Celery, out flowers, beans, lettuce, and spinach.

Udea rubigalis (Guen.)

Prespiracular shield crescent-shaped, often extending below the spiracle (A); distance between setae Adf_1 and F_1 less than that between Adf_1 and Adf_2 (B).



A



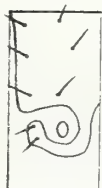
B

Cuba and Mexico.

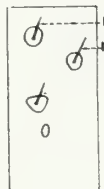
Hosts: Eggplant and tomato

Lineodes integra (Zell.)

22. Sclerotization extending from postero-lateral margin of prothoracic shield to prespiracular shield (A); plate at base of seta I blackish, ovate (B).



A



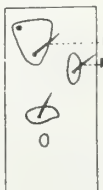
B

Central America, South America, and West Indies.

Hosts: Beets, cotton and cut flowers. (Larva a foliage feeder, seldom intercepted)

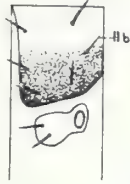
Loxostege similalis (Guen.)

No sclerotization extending from postero-lateral margin of prothoracic shield to prespiracular shield; plate at base of seta I brown, triangular, with a small fuscous pit near antero-dorsal margin (A) 23

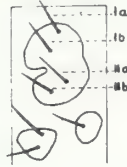


A

23. Prothoracic shield with blackish or fuscous shading below level of seta IIb (A); prespiracular shield enclosing the spiracle (A); plates bearing seta Ia - Ib and IIa - IIb of mesothorax fused (B).



A.



B

Puerto Rico.

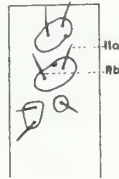
Host: Amaranthus.

Pachyzancla bipunctalis (F.)

- Prothoracic shield with blackish or fuscous shading below level of seta IIa (A); prespiracular shield not enclosing the spiracle (A); plates bearing setae Ia - Ib and IIa - IIb of mesothorax separate (not fused), a small fuscous pit near center of dorsal margin of plate bearing setae IIa - IIb (B).



A



B

Cuba, Puerto Rico, and Virgin Islands.

Hosts: Eggplant and tomato.

Pachyzancla periusalis (Walk.)

Family COSMOPTERYGIDAE

Seta IIa of prothorax above level of seta Ia (A); crochets of abdominal proleg uniordinal, in a complete ring (B).



A



B

Mexico and West Indies.

Hosts: Corn, cotton (bolls and lint), and dried fruits.

Pyroderces spp.

Family GELECHIIDAE

1. Abdominal prolegs rudimentary; each proleg usually with not more than 3 or 4 crochets (A).



A

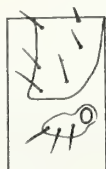
Practically cosmopolitan.

Host: Stored grain.

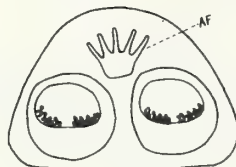
Sitotroga cerealella (Oliv.)

- Abdominal prolegs normal; each proleg with many more than 3 or 4 crochets 2

2. Setae on prespiracular shield of prothorax in a linear arrangement, shield enclosing the spiracle (A); crochets of anal legs biordinal, interrupted at center (B); anal fork present (B).



A



B

Costa Rica, Mexico, Puerto Rico, England, and Italy.

Hosts: Almond, apricot, cherry, peach, plum, nectarine, and tamarind (bean pod).

Anarsia lineatella (Zell.)

- Setae on prespiracular shield of prothorax triangularly arranged, shield not enclosing the spiracle (A); crochets of anal legs uniordinal or biordinal, not interrupted at center (B); anal fork absent (B) 3

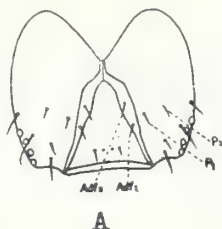


A

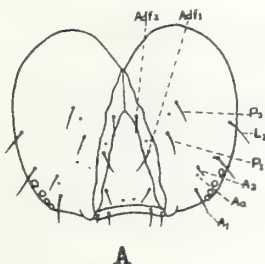


B

3. Setae Adf_1 and Adf_2 close together, decidedly anterior to apex of front (A); P_1 but slightly above level of Adf_1 and with P_2 laterad of P_1 (A) 4



- Setae Adf_1 and Adf_2 not closely associated, anterior to apex of front; seta P_2 posterior to P_1 (A); [puncture A_a between setae A_1 and A_2 (A); prothoracic shield light brown, with a pale reniform spot posterior to seta Ib (B); seta III of 8th abdominal segment above and in front of spiracle (C); crochets of abdominal prolegs uniordinal and arranged in a penellipse (D); skin smooth.]



Brazil, Egypt, India, Mexico, and West Indies.

Hosts: Cotton and okra.

Pectinophora gossypiella (Saund.)

4. Prothoracic shield pale, whitish, with dark fuscous shading along lateral and posterior margins (A).



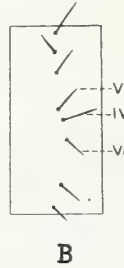
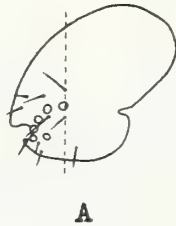
Bahamas, Chile, Cuba, Mexico, Peru, Hawaii, and Virgin Islands.

Host: Tomato.

Keiferia lycopersicella (Busck)

- Prothoracic shield entirely dark brown or blackish 5

5. Line joining setae L_1 and O_2 tangent to or passing through ocellus I (A); setae V, IV, and VI of 9th abdominal segment in line (approximately) (B).

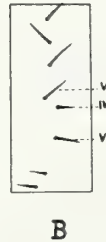
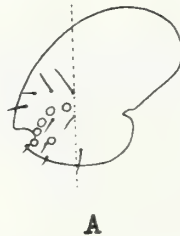


Cuba and Mexico.

Hosts: Pepper and tomato.

Gnorimoschema gudmannella (Wlsm.)

- Line joining setae L_1 and O_2 distinctly posterior to ocellus I (A); setae V, IV, and VI of 9th abdominal segment in a triangular arrangement (B).



Practically cosmopolitan.

Hosts: Potato (Irish) and tomato.

Gnorimoschema operculella (Zell.)

Family OECOPHORIDAE

1. Number of ocelli reduced (only 2 present) (A); submentum with a large oval pit (B).



A



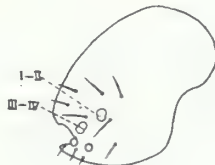
B

Practically cosmopolitan.

Hosts: Bulbs and roots

Endrosis lacteella (Schiff.)

- All ocelli present (I-II and III-IV more or less fused (A)); submentum without an oval pit.



A

Europe.

Host: Bulbs.

Hofmannophila pseudospretella (Staint.)

Family BLASTORASIDAE

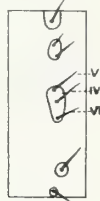
As there are few reliable characters for separating the larval forms in this family, specific determinations are very difficult. However, the following combination of characters will help to separate them from those of closely related families: Large oval pit on the submentum; seta III directly above, or above and slightly behind, the spiracle on 8th abdominal segment; only 3 setae in group VII of abdominal proleg and frequently with a dark ring about base of seta III on abdominal segments 1 - 7.

Mexico, Central America, and West Indies.

Hosts: Cotton (bolls), banana (debris), pepper, and pineapple.

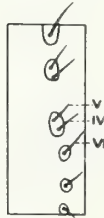
Family OLETHREUTIDAE

1. Anal fork present; seta VI of 9th abdominal segment on same plate with setae V and IV (A) 2



A

- Anal fork absent; seta VI of 9th abdominal segment not on same plate with setae V and IV (A).



A

Practically cosmopolitan.

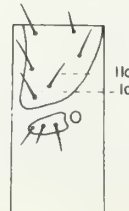
Hosts: Apple, pear, and quince.

Carpocapsa pomonella (L.)

2. A blackish or fuscous band on side of head, extending from lateral incision of hind margin to, and including base of, seta O_2 (A); prothoracic seta IIc dorsocaudad of Ic (B).



A



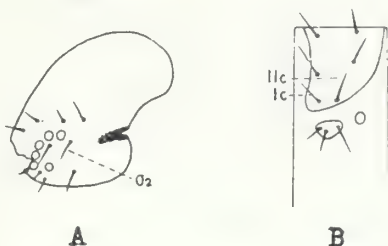
B

Mexico.

Host: String beans.

Epinotia aporema (Wlsm.)

- A short black or fuscous band on side of head but not extending to seta O₂ (A); prothoracic seta IIc directly caudad of seta Ic (B).

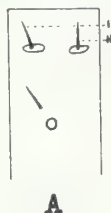


Australia, China, Japan, and Mexico.
Hosts: Apple, peach, pear, and quince.

Grapholitha spp. (May be
any of several species
infesting these hosts.)

Family TORTRICIDAE

Several species of Tortricidae attack pepper and tomato. However, the larvae of the genus Platynota are readily recognized by the white chalklike appearance of the elongate plates at bases of setae I and II (A). The characters noted below will separate the two species frequently intercepted.



1. Head capsule and prothoracic shield blackish or fuscous.

Cuba and Mexico.

Hosts: Pepper and tomato.

Platynota rostrana (Walk.)

- Head capsule and prothoracic shield pale yellowish; no dark fuscous shading along posterior margin of shield.

Cuba and Mexico.

Hosts: Pepper and tomato.

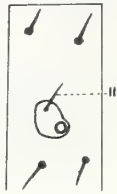
Platynota stultana (Wlsm.)

Family PHALONIIDAE

The only phaloniid with which we are concerned here is an as yet undescribed species in pepper pods from Mexico. The family characters given in the key in conjunction with the host should suffice for its identification. Phalonia abornana chatka Busck

Family HYPONOMEUTIDAE (Including PLUTELLIDAE)

1. Plate at base of seta III enclosing abdominal spiracle (A).



A

Belgium, France, Holland, Italy, and Spain.

Host: Leeks.

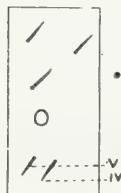
Acrolepia assectella (Zell.)

- Plate at base of seta III not enclosing abdominal spiracle (A).. 2



A

2. Prothoracic shield pale, without fuscous markings; setae IV and V of proleg-bearing segments close together but not on same plate (A); 9th abdominal segment bearing 9 setae, I, II, and III on a single plate or with seta I slightly posterior to margin of the plate (B); prolegs normal, crochets in a complete ring (C).



A



B



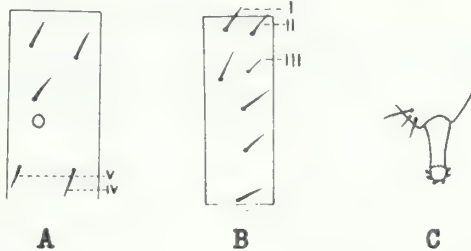
C

Italy, Norway, Scotland, and Sweden.

Hosts: Moss roots and sorbus berries.

Argyresthia conjugella (Zell.)

- Prothoracic shield pale, with reddish-fusces markings; setae IV and V of proleg-bearing segments distant from each other (A); 9th abdominal segment bearing 7 setae, I, II, and III not on a single plate (B); prolegs long and slender, crochets in a pseudo-circle (C).



Practically cosmopolitan.

Hosts: Cabbage, carrot, celery, broccoli, mustard, and turnip.

Plutella maculipennis (Curt.)

Family ACROLOPHIDAE

Prothoracic and prespiracular shields adjacent, partially fused (A); ocelli I and II approximate, III, IV, and V close together, with VI posterior to and slightly below V (B).



Central and South America.

Hosts: Orchid.

Acrolophus sp.

References

Bottimer, L. J.

1926. Notes on some Lepidoptera from eastern Texas. Jour. Agr. Research 33: 797-819, illus.

Busck, August

1917. The pink bollworm, Pectinophora gossypiella. Jour. Agr. Research 9: 333-370, illus.
1928. Phthorimaea lycopersicella, new species (family Gelechiidae) a leaf feeder on tomato. (Lep.). Hawaii Ent. Soc. Proc. 7 (1): 171-178, illus.

Crumb, S. E.

1926. The nearctic budworms of the lepidopterous genus Heliothis. U. S. Natl. Mus. Proc. 68, no. 2617, art. 16, 88 pp., illus.
1927. The army worms. Bull. Brooklyn Ent. Soc. 22: 41-55, illus.
1929. Tobacco cutworms. U. S. Dept. Agr. Tech. Bull. 88, 179 pp., illus.
1932. The more important climbing cutworms. Bull. Brooklyn Ent. Soc. 27: 73-100, illus.

Davis, E. G., Horton, J. R., Gable, C. H., Blanchard, R. A., and Heinrich, Carl.

1933. The southwestern corn borer. U. S. Dept. Agr. Tech. Bull. 388, 62 pp., illus.

Ellis, William, O.

1925. Some lepidopterous larvae resembling the European corn borer. Jour. Agr. Research 30: 777-792, illus.

Forbes, W. T. M.

1923. The Lepidoptera of New York and neighboring States. Cornell Univ. Agr. Expt. Sta. memoir 68, 729 pp., illus.

Fracker, S. B.

1915. The classification of lepidopterous larvae. Univ. Ill. Biol. Monog. 2 (1), 169 pp., illus.

Garman, H., and Jewett, H. H.

1914. The life history and habits of the corn-ear worm (Chloridea obsoleta). Ky. Agr. Expt. Sta. Bull. 187: 503-591, illus.

Garman, H.

1918. A comparison of several species of Lepidoptera infesting apple in Maryland with additional notes on the oriental peach moth. Md. Agr. Expt. Sta. Bull. 223: 103-126, illus.
1920. Observation on the structure and coloration of the larval corn-ear worm, the budworm, and a few other lepidopterous larvae. Ky. Agr. Expt. Sta. Bull. (Research) 227: 55-84, illus.
1930. The oriental peach moth in Connecticut. Conn. Agr. Expt. Sta. Bull. 313: 401-451, illus.

Halloway, T. E.

1916. Larval characters and distribution of two species of Diatraea. Jour. Agr. Research 6: 621-626, illus.

Halloway, T. E., Haley, W. E., Loftin, U. C., and Heinrich, Carl.

1928. The sugar-cane moth borer in the United States. U. S. Dept. Agr. Tech. Bull. 41, 77 pp., illus.

Heinrich, Carl

1919. Note on the European corn borer (Pyrausta nubilalis Hbn.) and its nearest American allies, with description of larvae, pupae, and one new species. Jour. Agr. Research 18: 171-178, illus.
1921. Some Lepidoptera likely to be confused with the pink bollworm. Jour. Agr. Research 20: 807-836, illus.

Jones, Thomas H.

1923. The eggplant leaf-miner, Phthorimaea glochinella Zeller. Jour. Agr. Research 26: 567-570, illus.

Keifer, H. H.

1935. California Microlepidoptera VII. Calif. Dept. Agr. Mo. Bull. 24: 195-218, illus.
1936. California Microlepidoptera X. Calif. Dept. Agr. Mo. Bull. 25: 349-359, illus.
1937. California Microlepidoptera XI. Calif. Dept. Agr. Mo. Bull. 26: 177-203, illus.
1937. California Microlepidoptera XII. Calif. Dept. Agr. Mo. Bull. 26: 235-259, illus.

Luginbill, P.

1928. The fall armyworm. U. S. Dept. Agr. Tech. Bull. 34, 91 pp., illus.

Meyrick, Edward.

1928. Revised handbook of British Lepidoptera. 914 pp., illus. London.

Quaintance, A. L.

1899. Some important insect enemies of cucurbits. Ga. Expt. Sta. Bull. 45: 25-50, illus.
1901. The pickle worm (Margarona nitidalis Cramer). Ga. Expt. Sta. Bull. 54: 73-94, illus.

Quaintance, A. L., and Wood, W. B.

1916. Laspeyresia molesta, an important new insect enemy of the peach. Jour. Agr. Research 7: 373-377, illus.

Richards, O. W., and Thomson, W. S.

1932. A contribution to the study of the genera Ephestia, Gn. (including Strymax, Dyar), and Plodia, Gn. (Lepidoptera, Phycitidae), with notes on parasites of the larvae. Ent. Soc. London, Trans. 80: 169-250, illus.

Scudder, S. H.

1889. The butterflies of eastern United States and Canada. v. 2, pp. 768-1774, illus.

Weigel, C. A., Broadbent, B. M., Busck, August, and Heinrich, Carl.

1924. The greenhouse leaf-tyer, Phlyctaenia rubigalis (Guenée). Jour. Agr. Research 29: 137-158, illus.

Wolcott, Geo. N.

1933. The lima bean pod borer caterpillars of Puerto Rico. Jour. Dept. of Agr. Puerto Rico 17: 241-255, illus.
1934. Lima bean pod-borer caterpillars of Puerto Rico on their wild hosts. Jour. Dept. Agr., Univ. Puerto Rico 18: 429-434.

Wood, W. B., and Selkregg, E. R.

1918. Further notes on Laspeyresia molesta. Jour. Agr. Research 13: 59-72, illus.

